

## REMARKS/ARGUMENTS

In the Office Action, the Examiner has rejected all of the pending claims based on Bosshart in view of Naik.

The Examiner argues that Bosshart discloses a multilayered coating applied to a metal substrate comprising a metallic material adhered to the metal substrate, interlayers of metal/ceramic materials, and an outer layer of 100% ceramic material. As such, the Examiner acknowledges that Bosshart does not disclose a separate metal layer between the base metallic material and the beginning of the metal/ceramic gradient interlayers; Bosshart only discloses metal/ceramic interlayers having a compositional gradient going from metal to ceramic between the base material and the top material. Therefore, the Examiner acknowledges that Bosshart does not disclose Applicants' claimed *second layer* made of a *metal alloy material* that is adapted to the composition of the surface of the coated component, *as is* the *first layer of metallic material*, and which is disposed between the first layer of metallic material and the third layer of gradated metal-ceramic material.

However, the Examiner argues that Naik discloses a coating with an interlayer, a metal layer, and a ceramic hard layer. In addition, the Examiner argues that Naik discloses a transitional zone between the metal layer and the ceramic hard layer made by creating a compositional gradient between the two layers. The Examiner then argues that it would have been obvious to place a "separate metal layer" between the metallic layer and the metal/ceramic interlayers of Bosshart "as demonstrated by Naik". Applicants respectfully traverse this rejection by the Examiner.

First, Applicants respectfully submit that the Examiner has not argued that Naik discloses any "separate metal layer" disposed between a metal layer and a ceramic hard layer. The Examiner has merely argued that Naik discloses a "transitional zone" between a metal layer and a ceramic hard layer and that transitional gradient layers transition from a majority of one material to another material. Thus, Applicants respectfully submit that even if Bosshart can be modified by Naik, and even if Naik discloses a "transitional zone" between a metal layer and a ceramic hard layer, the modified Bosshart reference still does

not include a separate metal layer between the metallic layer and the beginning of the metal/ceramic interlayers since Naik does not “demonstrate” such a layer.

Again, as acknowledged by the Examiner, all that Naik discloses is a transitional zone between a metal layer and a ceramic hard layer made by creating a compositional gradient between the two layers. Such a “transitional zone” is not a “separate metal layer” even if the transitional layer transitions from a majority of one material to another. Further, such a transitional zone of Naik, even if it could in any way be interpreted to disclose a “separate metal layer”, still does not disclose Applicants’ claimed second layer where the second layer is made of a *metal alloy material* that is adapted to the composition of the surface of the coated component. In Applicants’ invention, the *metal alloy material* of the *second layer* that is adapted to the composition of the component surface is *claimed distinctly from* the *metallic material* of the *first layer* that is *also* adapted to the composition of the surface of the coated component. At most, all that Naik could disclose is a compositional gradient between two layers where the compositional gradient transitions from a majority of a metal material to a ceramic hard material. Therefore, Applicants respectfully submit that Bosshart and Naik do not render obvious Applicants’ invention.

Further, Applicants respectfully submit that based on the principle of operation of Bosshart, where interlayers of graded metal/ceramic material of increasing ceramic composition are provided between a metallic bond coat layer and an all ceramic layer, there would be no motivation for including a “separate metal layer” of Naik in Bosshart even if Naik can in any way be argued to disclose such a “separate metal layer” between a metal layer and a ceramic hard layer. As taught in Bosshart, each succeeding metal/ceramic layer has a higher proportion of ceramic material than the prior layer and a lesser proportion of ceramic material than the layer to be subsequently applied. Based on this principle of operation of Bosshart for forming a structure coated with graded metal/ceramic material applied to a first layer of a metallic bond coat, Applicants respectfully submit that there would be no motivation for including a separate metal layer between the metallic bond coat and the graded metal/ceramic

material layers of increasing ceramic composition. Further, Applicants respectfully submit that any such attempted modification would change the principle of operation of Bosshart and render Bosshart unsatisfactory for its intended purpose, both of which are impermissible.

Further yet, Applicants respectfully submit that there would be no motivation for including the transitional zone of Naik, which transitional zone transitions from a metal material to a ceramic hard material, because Bosshart already discloses graded metal/ceramic layers. Including the transitional metal/ceramic zone of Naik in the coating of Bosshart, which already includes graded metal/ceramic layers, would serve no purpose.

Therefore, Applicants respectfully submit that pending claims 16-31 are allowable over Bosshart and Naik. Applicants further respectfully request rejoinder of claims 32-33 in the patent application, as provided for in the Restriction Requirement, since these withdrawn process claims require all the limitations of the believed-to-be allowable product claims.

Lastly, Applicants respectfully submit that the term  $\text{CrN}_{1-x}$  material of claim 20 and terms  $\text{CrAlN}_{1-x}$  material and  $\text{TiAlN}_{1-x}$  material of claim 24 are terms that are defined in the art, and therefore, Applicants respectfully submit that these terms are not indefinite. Therefore, Applicants respectfully request that the Examiner withdraw her rejections of claims 20 and 24 based on indefiniteness.

Applicants respectfully submit that the application is in condition for allowance. If there are any questions regarding this Response or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered to include a Petition for an Extension of Time sufficient to effect a timely response. Please charge any such fee, any deficiency in fees, or credit any overpayments to Deposit Account No. 05-1323 (Docket No. 011235.57359US).

Respectfully submitted,

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